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EXAMINER
PARK, C

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DATE MAILED: 11/14/94

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 12/3/92 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☒ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449. (2 SHEETS)
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____.

Part II SUMMARY OF ACTION

1. ☒ Claims 1 - 22 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1 - 22 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. _____ ; filed on _____.
13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

1. This application has been examined with claims 1-22 currently pending.

2. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119, which papers have been placed of record in the file.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

4. The drawings are objected to because of the reasons cited in the enclosed PTO form 948. Correction is required. However, correction of the noted defect can be deferred until the application is allowed by the examiner.

5. There are two claims numbered 21. According to 37 C.F.R. § 1.75(f), claims must be numbered consecutively. Thus, the first claim numbered 21, originally filed, is hereinafter renumbered as 17, and the second claim numbered 21, added by an amendment, is kept as claim 21.

6. Claims 1-22 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6.1 As per claim 1, although "[a]n automatic transmission control system" is claimed in the preamble, no control of the automatic transmission is recited in the body of the claim. Thus, the claim is incomplete.

6.2 As per claims 4-5 and 20, it is not clear to what the term "those" (line 5) refers.

6.3 As per claim 5, the phrase "calculates . . . by changing-over between" makes the claim vague and indefinite because the phrase does not make any sense.

6.4 As per claim 7, since there are multiple of "predetermined value[s]" recited in the claim and in the preceding claims, Examiner suggests distinguishing the values from one another. For example, --first--, --second--, --third--, and so on might be used.

6.5 As per claim 8-11, it is not clear what is meant by "speed change line" (line 3).

6.6 As per claims 10-11, it is not clear to what the term "it" (line 5) refers.

6.7 As per claim 12, "said shift schedule variable-control unit gear position determination means" (lines 12-13) lacks a proper antecedent basis.

6.8 As per claim 16, although an "automatic transmission control" is claimed, no control of the automatic transmission is recited. Thus, the claim is incomplete.

6.9 As per claim 17, it is not clear what is meant by "accepted" (line 5) and what "accepts" the "acceleration signal". Accordingly, it is not clear what is meant by the claim language.

6.10 As per claim 18, although a "method for controlling an automatic transmission" is claimed, no control of the automatic transmission is recited. Thus, the claim is incomplete.

6.11 All the dependent claims are rejected or further rejected for incorporating deficiencies cited above from their respective parent claims.

6.12 All the rejections hereinafter are based on the examiner's best understanding and interpretation of the claims in light of the deficiencies cited above.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 8-12, and 15-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Morita (5,035,160).

8.1 As per claims 1 and 18, Morita teaches an automatic transmission control system for a vehicle. Morita teaches load computation means for determining the weight of the vehicle (column 4, lines 24+), output torque estimation means for estimating the output torque which is equivalent to the engine torque (input torque to the transmission) multiplied by the present transmission ratio (column 4, lines 1+), running load estimation means for estimating a running load (resistance) from the vehicle weight and the output torque (column 4, lines 14+), memory means for storing shift schedules (column 3, lines 36+), and a shift schedule variable-control unit for determining a shift schedule based on the estimated running load and the stored shift schedules (column 4, lines 28-39) as claimed.

8.2 As per claims 8-11, Morita teaches continuously varying the shift pattern or schedule in response to the running resistance (column 4, lines 28-39), vehicle weight (column 4, lines 17-21), inclination angle of the automobile (column 3, lines 36-47), and the opening degree of the throttle valve which is equivalent to the acceleration request by the driver (column 4, lines 1-6).

8.3 As per claims 12 and 15-17, Morita teaches an acceleration input means (column 4, lines 13+) as claimed. Morita teaches that the running load estimating means estimates the running

load further based on the acceleration (column 4, lines 14+). Morita teaches the gear position determination means for determining a shift schedule (column 4, lines 28-39) and determining a gear position (column 4, lines 40+) as claimed.

9. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

10. Claims 2-5, 14 and 19-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Morita ('160) as applied to claims 1, 8-12, and 15-18 above, and further in view of Tanaka (5,309,790).

10.1 As per claims 2-4 and 19-20, Morita teaches estimating the output torque based on the characteristics of the engine (column 4, lines 2+). Morita does not specifically teach estimating the output torque based on the characteristics of the torque converter as claimed. However, estimating the output torque on the basis of the torque converter characteristics has been well known and commonly used in the art of transmission control. Further, Tanaka teaches calculating

the input torque to the transmission based on a characteristic value of the torque converter and the engine characteristics (column 1, lines 50+; column 5, lines 32-58). A person of ordinary skill in the art of transmission control would have been motivated at the time of the present invention to incorporate the above well known method of estimating the torque taught by Tanaka into the teachings of Morita and replace the engine output torque taught by Morita with the estimated torque taught by Tanaka in order to increase accuracy in estimating the torque (Tanaka, column 2, lines 10+) because engine generated torque is varied according to various conditions that it is difficult to estimate the engine generated torque based on engine characteristics (Tanaka, column 1, lines 38-42).

Therefore, in light of the above motivation for increased accuracy in estimating the torque, it would have been obvious for a person of ordinary skill in the art of transmission control at the time of the present invention to combine the relevant teachings of Morita and Tanaka.

10.2 As per claims 5, 14 and 21-22, Tanaka teaches estimating the torque based on characteristics of both the engine and the torque converter based on the speed ratio (Figures 4(a) and 4(b); column 5, lines 48+).

11. Claim 13 is rejected under 35 U.S.C. § 103 as being unpatentable over Morita ('160) in view of Tanaka as applied to claims 2-5, 14, and 19-22 above, and further in view of Asayama et al. (4,836,057).

As per claim 13, neither Morita nor Tanaka teaches weight estimation means for estimating the vehicle weight in response to a throttle valve signal, a vehicle speed signal, and the acceleration signal as claimed. However, Asayama et al. teach calculating the vehicle weight

based on the driving torque and acceleration in addition to several other parameters (column 23, lines 4-68; column 25, lines 54+). Asayama et al. also teach that the driving torque is calculated from the throttling amount (column 23, lines 50+) and the acceleration is derived from differentiating speed (column 24, lines 27+). Thus, Asayama et al. teach calculating the vehicle weight based on the throttling amount, the vehicle speed, and the acceleration as claimed. A person of ordinary skill in the art of transmission control would have been motivated at the time of the present invention to incorporate the above teaching of calculating the vehicle weight into the combined teachings of Morita and Tanaka, and replace the prestored weight taught by Morita with the calculated weight taught by Asayama et al. in order to improve accuracy of the vehicle weight thereby improving the accuracy of the calculated running load or resistance because the stored weight taught by Morita does not change with respect to such weight affecting conditions as the number of passengers and the amount of cargo which would affect the calculated weight taught by Asayama et al.

Therefore, in light of the above motivation of improved accuracy, it would have been obvious for a person of ordinary skill in the art of transmission control at the time of the present invention to combine the relevant teachings of Morita, Tanaka, and Asayama et al.

12. Claims 6-7 would be allowable if rewritten to overcome the rejection under 35 U.S.C. § 112 and to include all of the limitations of the base claim and any intervening claims because utilizing a neural network as claimed to estimate weight of the vehicle in an automatic transmission control system recited in the parent claim, claim 1, is deemed to have not been taught by the cited prior art.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Collin W. Park whose telephone number is (703) 305-9754. The examiner can normally be reached on Monday - Thursday from 8:00 AM - 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for this Group is (703) 305-9564,9565.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.

October 31, 1994

COLLIN W. PARK
PATENT EXAMINER
GROUP 2300